

ANTIDegradation Proposed Procedure for OSRW/EUW

Introduction

There are three conditions that must be satisfied before a proposed lowering of water quality for a non-BCC is considered to be a significant lowering of water quality. First, there must be a new or increased permit limit for a pollutant or pollutant parameter. Second, the new or increased permit limit must result in a calculated increase in the ambient concentration of the pollutant or pollutant parameter outside of the designated mixing zone, where applicable, in the receiving water body. Third, the new or increased permit limit must result in a lowering of water quality that is greater than a de minimis lowering of water quality.

STEP 1: NEW OR INCREASED PERMIT LIMIT BASED ON (327 IAC 5-2-11.3(b)(1)(B)) and THE NEW DE MINIMIS FOR OSRW/EUW

327 IAC 5-2-11.3(b)(1)(B) states that there must be a proposed new or increased permit limit for a pollutant or pollutant parameter for there to be a significant lowering of water quality.

The evaluation to determine if an effluent limit should be placed in the permit is conducted by comparing the projected effluent quality (PEQ) to the projected effluent limit (PEL). If the PEQ is greater than the PEL, a water quality based effluent limit (WQBEL) is required.

The PEL is either the Water Quality Based Effluent Limit (WQBEL) calculated without the benefit of a mixing zone, or the Default Technology Based Effluent Limit (DTBEL), whichever is more stringent.

STEP 2: CALCULATED CONCENTRATION INCREASE IN THE RECEIVING WATER BODY BASED ON (327 IAC 5-2-11.3(b)(1)(B)(i))

The new or increased permit limit must result in a calculated increase in the ambient concentration of the pollutant or pollutant parameter outside of the designated mixing zone, where applicable, in the receiving water body for there to be a significant lowering of water quality. This will occur if the new or increased permit limit results in a proposed downstream concentration of the pollutant or pollutant parameter (C_{sp}) that is greater than the existing downstream concentration of the pollutant or pollutant parameter (C_{se}). The following calculation shall be used to make this determination:

If $C_{sp} > C_{se}$, then there is a calculated increase in the downstream concentration of the pollutant or pollutant parameter.

$$C_{sp} = \frac{(C_p * Q_p) + (C_b * Q_s)}{Q_p + Q_s} \quad \text{(Proposed downstream concentration of the pollutant or pollutant parameter.)}$$

$$C_{se} = \frac{(C_e * Q_e) + (C_b * Q_{s1})}{Q_e + Q_{s1}} \quad \text{(Existing downstream concentration of the pollutant or pollutant parameter.)}$$

C_p = Proposed monthly average concentration limit (in mg/l).

C_e = Existing monthly average concentration limit (in mg/l).

- If the existing permit does not contain a monthly average concentration limit for the pollutant or pollutant parameter, but does contain a daily maximum concentration limit, the daily maximum limit shall be used.
- If the existing permit does not contain a concentration limit for the pollutant or pollutant parameter, but does contain a monthly average mass limit (or daily maximum if no monthly average), the mass limit shall be converted into a concentration limit by dividing the mass limit by the existing effluent flow, Q_e , defined below and by 8.3454 (conversion factor).
- If the existing permit does not contain an effluent limit for the pollutant or pollutant parameter, and the pollutant or pollutant parameter is present in the discharge, then C_e is equal to the monthly average projected effluent quality (PEQ) calculated under 327 IAC 5-2-11.5(b)(1)(B).
- If the facility is an existing discharger but does not have an NPDES permit for the discharge (unpermitted discharge), then C_e is equal to zero (0).
- If the pollutant or pollutant parameter is not currently discharged (all new facilities would fit this category), then C_e is equal to zero (0).

Q_p = Proposed effluent flow (in mgd). This is the flow used in the calculation of the wasteload allocation for the new, renewed or modified permit. (327 IAC 5-2-11.4(a)(9)).

Q_e = Existing effluent flow (in mgd). This flow shall be determined for the existing facility in accordance with 327 IAC 5-2-11.4(a)(9). This flow will be equal to the proposed effluent flow if there are no planned changes at the facility.

Q_{s1} = The stream design flow used in the calculation of the wasteload allocation that is the basis of the water quality-based effluent limits (WQBELs) for the new, renewed or modified permit (in mgd). (327 IAC 5-2-11.4(b))

C_b = Background concentration used in the calculation of the wasteload allocation for the new, renewed or modified permit (in mg/l). (327 IAC 5-2-11.4(a)(8))

STEP 3: LOWERING OF WATER QUALITY GREATER THAN THE NEW DE MINIMIS LOWERING OF WATER QUALITY

The proposed lowering of water quality must be greater than de minimis for there to be a significant lowering of water quality. A lowering is greater than de minimis if the proposed increase in mass discharged of the pollutant or pollutant parameter is greater than the mass calculated using the new or increased flow, and either the Water Quality Based Effluent Limit (WQBEL) calculated without the benefit of a mixing zone, or the Default Technology Based Effluent Limit (DTBEL), whichever is more stringent

A. Proposed Increase in Mass Discharged Is Greater than the mass calculated using the new or increased flow, and either the Water Quality Based Effluent Limit (WQBEL) calculated without the benefit of a mixing zone, or the Default Technology Based Effluent Limit (DTBEL), whichever is more stringent.

If $(M_P - M_e) \geq$ than the mass calculated using the new or increased flow, and either the Water Quality Based Effluent Limit (WQBEL) calculated without the benefit of a mixing zone, or the Default Technology Based Effluent Limit (DTBEL), whichever is more stringent, then the proposed increase in mass discharged of the pollutant or pollutant parameter is greater than de minimis.

M_P = Proposed monthly average mass limit (in lbs/day).

M_e = Existing monthly average mass limit (in lbs/day).

- If the existing permit does not contain a monthly average mass limit for the pollutant or pollutant parameter, but does contain a daily maximum mass limit, the existing daily maximum limit shall be used.
- If the existing permit does not contain a mass limit for the pollutant or pollutant parameter, but does contain a monthly average concentration limit (or daily maximum if no monthly average), the concentration limit shall be converted into a mass limit using the existing effluent flow, Q_e , defined in Part III, above.
- If the existing permit does not contain an effluent limit for the pollutant or pollutant parameter, and the pollutant or pollutant parameter is present in the discharge, M_e shall be set equal to the actual monthly average mass discharged. The actual monthly average mass discharged shall be calculated by multiplying the monthly average PEQ calculated under 327 IAC 5-2-11.5(b)(1)(B) by the existing effluent flow, Q_e , defined in Part III, above and by 8.3454 (conversion factor).
- If the facility is an existing discharger but does not have an NPDES permit for the discharge (unpermitted discharge), then M_e is equal to zero (0).

- If the pollutant or pollutant parameter is not currently discharged (all new facilities would fit this category), then M_e is equal to zero (0).

UL = The unused loading capacity.

B. Less than X% of the Total Loading Capacity Will be Used after the Proposed Increase

If $TLC - [M_p + (C_b * Q_{s2} * CF)] > 0.X * (TLC)$, then the proposed increase is greater than de minimis.

TLC = The total loading capacity (in lbs/day). See C(1), below.

M_p = See A, above.

C_b = See Step 2, above.

Q_{s2} = Stream design flow used to calculate the TLC (in mgd). See C(1), below.

CF = 8.3454. (Conversion factor)

C. Total Loading Capacity and Unused Loading Capacity

(1) Total Loading Capacity (TLC)

(a) Calculate the TLC for all applicable criteria as follows:

$$TLC = WQC * (Q_e + Q_{s2}) * CF$$

WQC = Applicable water quality criterion or value (in mg/l).

Q_e = See Step 2, above.

Q_{s2} = Applicable stream design flow for the WQC (in mgd). (327 IAC 5-2-11.4(b)).

CF = 8.3454. (Conversion factor)

(b) The lowest TLC calculated in (a) shall be the TLC used in this procedure.

(2) Unused Loading Capacity (ULC)

$$ULC = TLC - [M_e + (C_b * Q_{s2} * CF)]$$

M_e = See A, above.

C_b = See Step 2, above.

Q_{s2} = Stream design flow used to calculate the TLC (in mgd). See C(1), above.

CF = 8.3454. (Conversion factor)

STEP 4: PERMIT LIMITS THAT WILL NOT CAUSE A SIGNIFICANT LOWERING

If a new or increased permit limit was determined to cause a significant lowering of water quality above, adjusted permit limits can be calculated that do not cause a significant lowering of water quality. The discharger will be given the choice of accepting the adjusted permit limits or doing an antidegradation demonstration and potentially receiving the proposed permit limits. This procedure involves calculating a concentration limit that is based on the De minimis lowering of water quality and the mass limit that will not result in an increase in mass discharged of the pollutant or pollutant parameter that is greater than a de minimis increase.

A. Lowering of Water Quality that is De minimis

To be a de minimis lowering of water quality, the proposed increase in mass discharged must be less than or equal to the mass calculated using the new or increased flow, and either the Water Quality Based Effluent Limit (WQBEL) calculated without the benefit of a mixing zone, or the Default Technology Based Effluent Limit (DTBEL), whichever is more stringent